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GENERAL ELECTRIC
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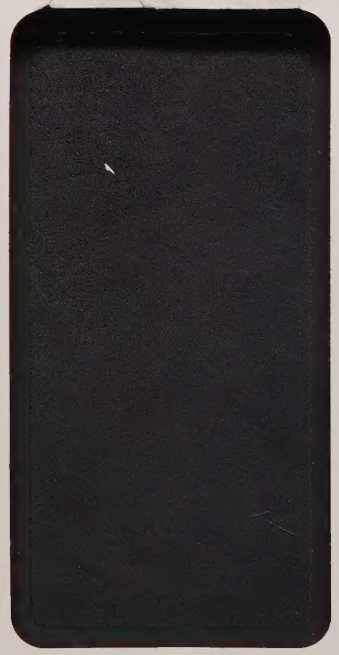

MODEL 5455D

PORTABLE dc HYPOT

INSTRUCTION MANUAL

GENERAL ELECTRIC
INSTRUMENTATION & COMMUNICATION
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ASSOCIATED RESEARCH, INCORPORATED

6125 West Howard Street

Chicago, Illinois 60648

U.S.A.

SECTION I

SPECIFICATIONS

1/28/77
5455D S/N 53
421-1

ASSOCIATED RESEARCH, INC.

MODEL SPECIFICATION - DC HYPOT

MODEL NUMBER:	5455D
DESCRIPTION:	Portable DC Hypot
PRIMARY APPLICATION:	Dielectric withstand testing of rotating machinery, transformers, switchgear and cables for acceptance and routine maintenance in the field.
INPUT	
Voltage:	115 volts AC
Frequency:	60 Hz
Phase:	Single
Current:	5A
OUTPUT	
Voltage:	0-30 KV DC continuously adjustable
KVA:	.150
Frequency:	DC
Current:	5 milliamperes
Duty Cycle:	Continuous
Failure Detector:	Current sensitive overload system monitoring current in return side of output. Fixed sensitivity of 5.1 MA.
Shorting Device:	Automatic output shorting solenoid.
VOLTAGE CONTROL:	Manually operated, equipped with zero return interlock system to avert misapplication of High Voltage.
METERING	
Kilovoltmeter:	Digital -- 0-30.0 KV with 100 volts reading resolution
Milliammeter:	Digital -- 0-199.9 microamperes with .1 microamperes reading resolution; 0-5.00 milliamperes with 10 microamperes reading resolution.
TERMINATION	
Input:	Six foot, 3 conductor power cable terminated in three prong grounding type plug.
H.V.:	Fifteen foot coaxial cable (Superflex)
Return:	Metered-Bypass-Ground terminals with disconnectable 15 ft. cables.
CABINETRY:	Portable style, 16" x 14" x 10"

SECTION II

GENERAL FEATURES

GENERAL FEATURES

LINE CABLE

Three conductor input cable terminated in standard three-prong grounding type plug.

HIGH VOLTAGE CABLE

Single conductor shielded high voltage cable terminated in male connector and clip for connecting item to high voltage output.

RETURN CABLES

Single conductor cables each terminated in spade lug and clip for connecting the test item to the RETURN terminals.

HIGH VOLTAGE OUTPUT RECEPTACLE

Female connector to receive the high voltage output cable.

POWER SWITCH/CIRCUIT BREAKER/INDICATOR

Makes or breaks all primary power (line voltage) to the instrument. Lighted actuator indicates power ON. Also functions as overload circuit breaker to protect primary input circuit.

HIGH VOLTAGE SWITCH

Operating in theprimary side of the high voltage control circuit, this switch controls the energizing and de-energizing of high voltage.

HIGH VOLTAGE INDICATOR

Red lamp indicates the high voltage control circuit is energized and high voltage is available at the output.

VOLTAGE CONTROL

Permits continuous adjustment of the test voltage to the desired value from zero to maximum output of the instrument. This control is equipped with a zero return interlock switch that requires the control to be at zero (full counter-clockwise) before high voltage can be energized.

KILOVOLTMETER

Connected directly across the output through a resistive voltage divider to indicated voltage actually being applied to the test item, and therefore independent of internal regulation.

MICROAMMETER

The microammeter indicates the leakage current in the metered return side of the output circuit. The meter is electronically protected against burn-out should it be accidentally overloaded. On instruments with digital metering, an overload is indicated by a blinking display.

GROUNDED SWITCH AND RETURN TERMINALS

Since this instrument incorporates a very low current range, provisions have been made for bypassing undesireable currents around the microammeter.

The grounded switch in conjunction with the metered and bypass terminals provides a means for directing the unwanted current around the meter and the desired current through the microammeter.

By connecting the return side of the specimen to the metered terminal and selecting bypass return with the grounded switch (which grounds the bypass terminal) all leakages from the high voltage connection to the specimen and other unwanted leakages to ground will be directed around the microammeter. Only the specimen leakage current will flow through the microammeter. By selecting metered return with the grounded switch (which grounds the metered terminal), the total leakage to ground will flow through the microammeter.

When testing a specimen that may have isolated metallic parts that provide a leakage or high resistance path between the two points where the high voltage and return connections are made, the bypass terminal may be used as a guard circuit. If these isolated metallic parts are connected together and to bypass terminal, any leakage from the high voltage point to these parts will be directed around the metering circuit.

NOTE: When using the bypass terminal as a guard circuit, the grounded switch should be in the bypass return position unless the specimen return side is earth ground. Under this condition the grounded switch should be in the metered return position. When using the meter and bypass return system it must be realized that a ground cannot be connected to both terminals at the same time. This would result in bypassing the current meter with all return current.

CURRENT SWITCH

This selector switch provides for changing the sensitivity of the current meter to obtain the best meter readability. Refer to the Specifications section for ranges provided.

OUTPUT OVERLOAD BREAKER

The output overload breaker senses current in the return side of the output and shuts off high voltage should the output current exceed maximum rating of the instrument.

SAFETY GROUND TERMINAL

The safety ground terminal, located on the cabinet, is for connection to an earth ground electrode having adequately low impedance. For safety of operating personnel be sure a safety ground is always connected.

WARNING: FAILURE TO COMPLY WITH GROUNDING INSTRUCTIONS COULD RESULT IN A DANGEROUS SHOCK HAZARD.

OUTPUT SHORTING

This instrument is equipped with an automatic output shorting system that discharges the load and high voltage power supply through a bleeder resistor when high voltage is turned OFF.

SECTION III

OPERATING INSTRUCTIONS

SECTION 111

OPERATING INSTRUCTIONS

1. Turn the power and high voltage switches OFF, and the current switch to MA range.

2. Connect line cord to a source of power as indicated on the nameplate and Specifications sheet. If an adaptor is used, connect the ground lead to earth ground.

3. Connect a return lead to the metered terminals and to the item under test.

   WARNING: TO PREVENT POSSIBLE ELECTRICAL SHOCK HAZARD, ALWAYS CONNECT SAFETY GROUND TO A GOOD EARTH GROUND.

4. Plug the high voltage lead into the female high voltage connector on the instrument and connect to the item to be tested.

5. Rotate voltage control knob fully counter-clockwise.

6. Select metered return with the grounded switch. Refer to General Features for use of the bypass return system.

7. Turn the power switch ON.

8. Operate the high voltage switch to ON position.

9. Rotate the voltage control clockwise until the desired voltage is indicated on the kilovoltmeter.

10. The leakage current will be indicated by the current meter. If greater sensitivity is desired, select a lower range with the current selector switch.

11. If theoutput cu-rent exceeds the setting of the circuit breaker, high voltage will be de-energized. Return the voltage control to its full counter-clockwise position to re-energize the high voltage control circuit.

12. After the test is complete, turn the high voltage switch OFF and rotate the voltage control fully counter-clockwise.

    WARNING: WHEN USING THIS INSTRUMENT WITH CAPACITIVE LOADS, NEVER TURN POWER OR HIGH VOLTAGE OFF WHILE THE TERMINAL VOLTAGE EXCEEDS 5 KV. ALWAYS ALLOW ITEM UNDER TEST TO BLEED DOWN BELOW 5KV PRIOR TO DE-ENERGIZING H.V. OR TURNING POWER OFF.

SECTION IV

REPLACEMENT PARTS LIST

SECTION V

SCHEMATIC DIAGRAM

7/20/76
5455D, Rev. B
Ser# 53-63

MODEL 5455D - PORTABLE DC HYPOT

REPLACEMENT PARTS LIST

SYMBOL	PART NO.	DESCRIPTION
C-4	17567	Capacitor, 2uF @ 200 VDC
C-5-	21083	Capacitor, .005 uF @ 1 KV DC
CA-1	11649	Cable assembly (Line)
CA-2	32271	Cable assembly (High Voltage)
I-2	14159	Indicator, red (High Voltage)
M-1,2	31406	Meter, 3½ digit
NE-1-3	58591	Neon lamp, NE-2
RY-1	16568	Relay, DPDT
RY-2	14947	Relay, SPDT
R-1	57031	Resistor, fixed, 100K ± 10%, 1/2 W
R-101	14812	Resistor, fixed, 33K ± 10%, 1/2 W
R-36	15623	Resistor, fixed, 33K _ ½ W
R-602	10853	Resistor, fixed, 5K ± 1%, 1/2 W
R-701	14453	Resistor, fixed, 1K ± 1%, 1/2 W
R-	14753	Resistor, variable, 10K, 2W
R-B-D	11949	Resistor, fixed, 2M ± 5%, W
R-601	16208	Resistor, variable, 1.5K, W
R-703	10904	Resistor, fixed, 10 ohm ± 1%, 1/2 W
S-1	55005	Switch, toggle, DPST (Power)
S-2	59690	Switch, toggle, SPST (High Voltage)
S-3	10607	Switch, toggle, 3PDT (Overload, Bypass)
S-4	14014	Switch, rotary, 2 pole, 6 position (Current)
Fil-1	17709	Filter 110V 10A
T-1	58864	Transformer, variable (Voltage)
T-2	31779	Transformer, High Voltage
TER-1	11817	Terminal, black (Bypass)
TER-2	17478	Terminal, nickel (Ground)
TER-3	11818	Terminal, red (Metered)
VR-1,2,3	19840	Varistor
C-1,2,3	31684	Capacitor, .01 mf @ 20 KV
D-1,3	17041	Rectifier, silicon, HV
R-B-D	13109	Resistor, 100K, 10%, 20W
R-A	16544	Resistor, 120 M, 15%, 6W
SOL-1	32160	Solenoid
		Cable kit
	15876	Cable assembly (Metered)
	15874	Cable assembly (Ground)
	15875	Cable assembly (Return)
	16482	Bag, cable kit

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SYMBOL	PART NO.	DESCRIPTION
C-1,2,3	31684	Capacitor, .01 mf @ 20 KV
C-5,6,7	21083	Capacitor, .005 uF @ 1 KV DC
CA-1	11649	Cable assembly (Line)
CA-2	32271	Cable assembly (High Voltage)
CB-1	31838	Circuit Breaker (Power)
Fil-1	17709	Filter 110V 10A
I-2	14159	Indicator, red (High Voltage)
M-1,2	33072	Meter, 3½ digit
NE-101,701	15485	Lamp, neon
NE-601,702	58591	Neon lamp, NE-2
R-1, 103	57031	Resistor, fixed, 100K + 10%, 1/2 W
R-2,3,4	10627	Resistor, fixed, 2 meg
R-36	15623	Resistor, fixed 33K 1/2 W
R-101	14812	Resistor, fixed 33K + 10%, 1/2 W
R-601	16208	Resistor, variable, 1.5K, W
R-602	10853	Resistor, fixed, 5K + 1%, 1/2 W
R-701	11825	Resistor, fixed, 10K + 1%, 1/2 W
R-702	18445	Resistor, fixed: 1 meg, 1/2 W
R-703	16123	Resistor, fixed, 100 ohm + 1%, 1/2 W
R-A	16544	Resistor, 120 M, 15%, 6W
R-B,C,D	13109	Resistor, 100K, 10%, 20W
RT-4,5,6	17041	Rectifier, silicon, HV
RY-1	16568	Relay, DPDT
RY-101	14203	Relay, SPDT
S-1	59690	Switch, toggle, SPST (High Voltage)
S-2	16721	Switch, micro (Zero Ret)
S-3	10342	Switch, toggle, SPDT (Ground)
S-4	14014	Switch, rotary, 2 pole, 6 position (Current)
SOL-1	32160	Solenoid
T-1	58864	Transformer, variable (Voltage)
T-2	31779	Transformer, High Voltage
TER-1	11817	Terminal, black (Bypass)
TER-2	17478	Terminal, nickel (Ground)
TER-3	11818	Terminal, red (Metered)
TER-5	10304	Terminal, Safety ground
VR-1,2,3,4	19840	Varistor
	18210	Cable Kit
	15876	Cable assembly (Metered)
	15874	Cable assembly (Ground)
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M-1,2	31406	Meter, 3½ digit
NE-1-3	58591	Neon lamp, NE-2
RY-1	16568	Relay, DPDT
RY-2	14947	Relay, SPDT
R-1	57031	Resistor, fixed, 100K ± 10%, 1/2 W
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R-	14753	Resistor, variable, 10K, 2W
R-B-D	11949	Resistor, fixed, 2M ± 5%, 4 W
R-601	16208	Resistor, variable, 1.5K, W
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